

## Titanium Heat Pipe Thermal Plane, Phase I

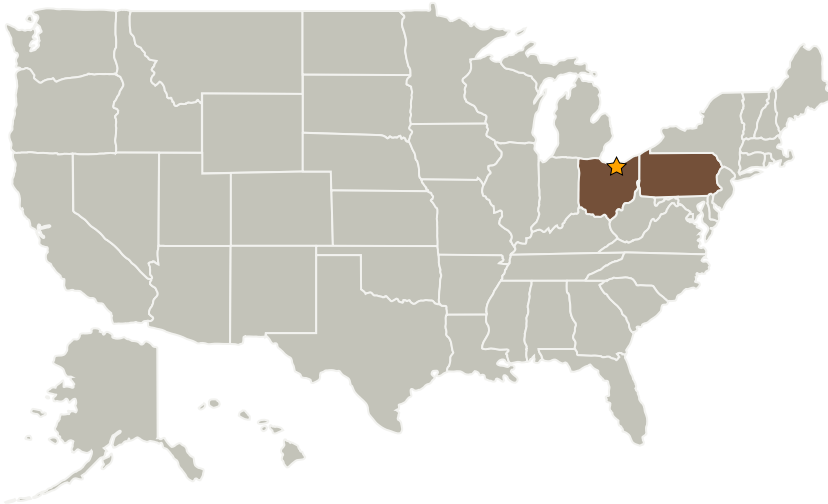
Completed Technology Project (2009 - 2009)



## Project Introduction

Thermacore Inc. proposes an innovative titanium heat pipe thermal plane for passive thermal control of individual cells within a fuel cell stack. The proposed technology eliminates actively pumped liquid coolant loops, which improves system efficiency, reliability, safety, simplicity, life cycle as well as saves weight and volume. Although the main purpose for this technology is thermal management of fuel cells for space applications, the same technology can be applied for electronics cooling: heat spreaders and heat sinks, where thin design is required. The proposed titanium heat pipe thermal plane will be reliable passive heat transfer device with the following parameters: bulk density: under 3 grams per cubic centimeter, thickness: less than 0.050 inches, effective thermal conductivity: in excess of 2,000 W/(m K), electrical resistivity: less than 0.2 ohms-cm, operation against gravity: 4 inches

## Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★ Glenn Research Center(GRC)	Lead Organization	NASA Center	Cleveland, Ohio
Thermacore, Inc.	Supporting Organization	Industry	Lancaster, Pennsylvania



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## Organizational Responsibility

**Responsible Mission Directorate:**

Space Technology Mission Directorate (STMD)

**Lead Center / Facility:**

Glenn Research Center (GRC)

**Responsible Program:**

Small Business Innovation Research/Small Business Tech Transfer

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## Primary U.S. Work Locations

Ohio

Pennsylvania

## Project Management

### Program Director:

Jason L Kessler

### Program Manager:

Carlos Torrez

## Technology Areas

### Primary:

- TX14 Thermal Management Systems
  - └ TX14.2 Thermal Control Components and Systems
    - └ TX14.2.2 Heat Transport